1997 ANNUAL REPORT

DIVISION OF REMEDIATION

BUREAU OF REMEDIATION & WASTE MANAGEMENT

This year was one of innovation for the Division of Remediation. We worked to improve our customer service by updating our Uncontrolled Hazardous Substance Site List and placing it on the internet for public access. The site list was previously available only by mail. The Division's Annual Report and the draft Soil Cleanup Guidelines are also available on the DEP Homepage. Innovative stream and wetlands remediation projects are ongoing at Loring AFB and the Dauphin Landfill. Innovation also extended to the funding of a number of cleanup projects. Sites in Saco, Brewer, South Paris, Corinna, Wells, and Plymouth all benefited from funding by diverse parties including: responsible parties; municipal government; school districts; EPA; and DEP's Uncontrolled Sites and Landfill Closure Bond Funds. Other funding mechanisms like insurance policies for remedial actions are in the discussion stages.

We have a Brownfields grant from EPA to improve our existing program and market contaminated sites for future reuse. DEP has had the Voluntary Remedial Action Plan (VRAP) program since 1993 and over 90 sites have used the program to cleanup and reuse contaminated sites. We have joined with EPA New England in an experiment to archive sites on CERCLIS that no longer need federal scrutiny and thereby remove the Superfund stigma.

The dirt really "moved" this year, as we completed cleanups at a large number of underground tank sites, municipal landfills, Superfund sites, state uncontrolled hazardous waste sites, federal sites, and private sites. Emergency removal of hazardous materials at sites in Portland, Corinna, Waterville, Sanford and Woodland protected the public from immediate health threats. We look forward to another challenging year. -- Mark Hyland, Director

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SPECIAL PROJECTS AND WORK GROUPS 1997 ACCOMPLISHMENTS

In 1997, Division staff participated in the following special projects/work groups:

- TQM Facilitator Pool
- Member of Quality Council
- Spill Site Tracking System Work Group
- Leaking Underground Storage Tank Process Action Team (LUSTPAC)
- ASTSWMO Base Closure Task Force
- ASTSWMO Federal Facilities Subcommittee
- DEP/Consulting Engineers of Maine Task Force Subgroup on Consulting
- Bureau Safety Advisory Committee
- Lighthouse Site Assessment Reviews
- Public Water Supply Investigation Group
- Surface Water Discharge Work Group
- Soil Stds. Implementation Work Group
- NEWMOA Innovative Technology Work Group
- ESII Test Revision Group
- Fastrack Contracting Oversight Group
- VRAP/ Brownfields Improvement Group
- Groundwater Cleanup Fund Stakeholders Group
- SOP for Point of Entry Treatment Systems
- Pollution Prevention Awards Committee
- Maine Uncontrolled Sites List Update

POLICY AND PROCEDURES

During 1997, the Division continued to work on procedures and policy statements including:

- Technical Basis Statement and Background for Soil Cleanup Guidelines Based on Direct Contact
- Draft DEP Direct Contact Soil Guidelines
- Draft Memorandum of Understanding for Surface Water Discharge
- DEP Strategic Plan

UNCONTROLLED SITES PROGRAM

This was the first year in which the State Uncontrolled Sites Unit functioned separately from the federal Superfund Program. In 1996, the Superfund section of the Uncontrolled Sites Program (USP) merged with the Federal Facilities Program (formerly in the Office of the Commissioner) to form the Federal Sites Unit. This effectively placed all federally focused remedial programs together. The remaining States Section became the State Sites Unit. This transition has allowed each Unit to focus on its specialty, eliminating duplication and the need for personnel to maintain proficiency in three program areas.

The USP policy continues to encourage responsible parties to undertake appropriate response actions. The goal is to achieve site remediation through voluntary action, using enforcement only when necessary. When there are no viable responsible parties, the USP seeks contributions from other interested parties and/or uses bond money to undertake remedial actions. While the USP did not seek new bond money in 1997, additional bond money will be needed to maintain and continue the program in the years to come. -- Hank Aho, Unit Leader

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The following site-specific narratives represent highlights of the 1997 Uncontrolled Sites Program activities:

Lewis Wolman Company, Waterville
Mercury Spill

On September 19, 1997, teams from the DEP's Response Division, the Department of Human Service's Bureau of Health, the Waterville Fire Department and Seacoast Ocean Services (SOS) responded to a mercury spill at a closed and abandoned metal recycling facility on 41 High Street in Waterville. Within days, the response expanded to include personnel from the Division, officials from the US EPA and their contract responders from the Superfund Technical Assessment and Response Team, nurses from the Board of Public Health, Waterville Police and other city officials and workers. The severity of the spill and the impact on the local communities required these teams to expand their investigation and cleanup efforts to homes and schools over four miles away from the spill site.

Over 40 homes/ apartments and three schools required sampling and evaluation for possible liquid and vapor mercury contamination. Although all of the schools and most of the residences were determined to be free of mercury contamination, crews removed contaminated material from five apartments, which required the evacuation of families, some permanently. In addition, over a 100 people were interviewed and tested for possible exposure to mercury.

When responders determined that some of the spilled mercury in the site building could not be recovered by normal methods because it had migrated into walls and subfloors, the building was demolished. Ten roll-off containers and ten 55-gallon drums of building debris were transported

to licensed hazardous and special waste landfills. All told, approximately fifty-five pounds of liquid mercury was recovered from the on-site building before it was demolished. Due to the high media interest in the event and a new public awareness, over the succeeding few weeks, more than a hundred additional pounds of liquid mercury was collected by DEP personnel from various local residents.

Waterville firemen and DEP response personnel packing potentially hazardous debris into 55 gallon drums for removal.

-- Wayne Paradis

Portland Bangor Waste Oil, Wells

The Portland Bangor Waste Oil Company operated a waste oil recycling facility on Burnt Mill Road in Wells from the mid 1950s until 1980. Customers included auto dealers, manufacturing facilities, trucking companies, military installations, State and local governments, and others across northern New England. Waste oil, contaminated water, sludge, and miscellaneous industrial wastes were brought to and processed at the site. Many of the wastes were spilled or disposed of at the site.

A 1992 joint EPA and DEP investigation determined that risk from onsite lead concentrations was high enough to warrant fencing the site. In 1993, volatile organic hydrocarbons were detected in two residential wells located within 1/4 mile of the site. Contamination levels were high enough in one of the wells to require treatment by a carbon filtration system. The DEP determined that cleanup of the site was a priority.

The DEP contracted with TechLaw, Inc. in 1993 to aid with organization of the legal case. TechLaw subsequently identified over 2900 responsible parties. In 1995, the State sent notice to the top 112 responsible parties in an attempt to initiate site cleanup. Since responsible parties initially failed to assume responsibility for site cleanup, the State hired Gerber/ Jacques Whitford in 1995 to conduct a Remedial Investigation and Feasibility Study at the site. Field work for the Remedial Investigation started in 1996 and continued through 1997.

Sampling soil from Test Pit 50. November 1997 photo courtesy of Jacques Whitford, Inc.

Responsible parties subsequently formed a technical review group to provide comment on technical issues relating to the Remedial Investigation and Feasibility Study. This role was expanded in 1997, when responsible parties hired Woodard and Curran.

In September 1997, the State notified almost 300 additional responsible parties, bringing the total close to 400.

The Remedial Investigation was nearly complete in 1997, and a final Report is expected in 1998. A supplemental investigation was conducted for the Responsible Parties by Woodard and Curran last Fall and a report is expected in the near future. Additionally, the State's Contractor, Gerber/ Jacques Whitford, has scheduled additional field work and has received DEP authorization to proceed with a Risk Assessment and a Feasibility Study at the Site.

Using crane to move drilling barge onto Lagoon 3. November 1997 photo courtesy of Jacques Whitford, Inc.

An innovative approach to final site remedial action is being considered at this site. The State and the responsible parties are attempting to reach an agreement whereby an independent third party can assume, for a fee, responsibility/ liability for site remediation. Details are still unresolved, and the State continues to negotiate with the responsible parties to obtain a settlement.

-- Clayton Maybee

Dauphin Disposal Facility, Bath

Innovative Wetland Technology

The Dauphin Disposal Facility located in Bath includes an 18 acre landfill site which operated as an automobile salvage and junkyard from the 1960's to 1985. In the late 1960's Eugene Dauphin, owner and operator of the site, began accepting industrial wastes from Bath Iron Works, Inc. (BIW). The wastes included general refuse, scrap metals, paint cans, drums of waste oils and hydraulic fluids, asbestos, and sandblast grit.

A Remedial Investigation and Feasibility Study were completed in 1996 (see 1996 Annual Report). The 18 inch clay cap installed in September 1996 was compacted to a maximum hydraulic conductivity of 5x10-7 cm/s, which reduced the contribution of hazardous substances to groundwater.

A cattail wetland located at the southwest property boundary abuts saturated landfill waste. The Remedial Investigation documented that surface water and sediments in the cattail wetland were impacted by landfill leachate. Volatile organic compounds, semi-volatiles, and metals have been detected in landfill leachate seeps at the wetland. Surface water samples collected where the outlet of the cattail wetland enters an intermittent stream (a tributary to a Class B stream), exceeded State ambient water quality criteria (AWQC) for iron.

Wetlands have the potential to remove metals from surface water by a variety of methods: chelation, filtration, precipitation, sedimentation, plant uptake, and adsorption. In an enhanced wetland environment, additional complexes may be formed with the acids produced by decaying organic matter and with the humic and fulvic acids released by peat. Since peat has a relatively high cation exchange capacity, forcing water into contact with peat can provide an effective means of

removing iron from surface water by cation exchange.

Bath Iron Works with their consultant, Sevee and Maher Engineers, designed an innovative remedial alternative to enhance these physical and chemical mechanisms for removing iron from the surface water. BIW submitted to DEP for review and approval a design for placement of four peat berms across the wetland.

Peat was selected as the berm material for its high cation exchange capacity and its tendency to secrete humic and fulvic acids, enabling it to remove metals, and thus aid in the wetland treatment process, leading to improved surface water quality. The peat, mined in Deblois, Maine, is proposed to be placed in natural fiber sacks to be located in such a way that the high sections would force the water in the wetland to flow in a circuitous path over the low wetland sections. During periods of low flow, the berms would increase the detention time in the wetland by forcing water to seep through the peat berms. Bureau of Land and Water Quality staff approved the project for compliance with the Natural Resources Protection Act, and Division staff approved the overall design.

Peat berm wetland enhancement construction at Dauphin Landfill. December 15, 1997.

BIW's contractor, Crooker and Sons Inc., completed the construction of the berms in one day on December 15, 1997. Work was scheduled when the ground and wetland were frozen to allow minimum disturbance to the wetland and maintain the integrity of the landfill cap during the use of heavy equipment.

BIW will inspect and maintain the peat berms as part the Long Term Monitoring Plan for the landfill remediation. In addition to semiannual surface water sampling at wetland sampling locations, BIW proposes to sample and analyze for iron twice a month during high seasonal flow. Although iron concentrations may fluctuate in the surface water, this additional data should establish a trend. After three years of monitoring, DEP will evaluate the effectiveness of the wetland enhancement remedial activities. A Certificate of Completion will be awarded to BIW provided AWQC is met at the confluence of the cattail outlet and the intermittent stream.

-- Lynne Cayting

STATE LEAD SITE CLEANUPS 1977 ACCOMPLISHMENTS

Investigations

Site investigations are conducted to characterize a site; they include such things as identification of contaminant source areas, determination of the nature of contamination, description of probable groundwater flow direction, and identification of potential receptors and potential pathways of offsite migration. A *remedial investigation* identifies and fills data gaps so that specific remedial alternatives can be evaluated. The *risk assessment*, performed in conjunction with a remedial investigation, is used to

determine threats to human health and the environment posed by hazardous substances at a site, and can be used to establish cleanup goals. The *feasibility study* identifies remedial action alternatives, establishes the process for evaluating an acceptable remedial action and ultimately selects the preferred alternative.

Remedial Investigations took place at the following sites during 1997:

- Walker Boardway, Wiscasset
- Leeds Metals, Leeds
- Maine Drilling & Blasting, Gardiner
- Eastland Woolen Mills, Corinna
- Portland Bangor Waste Oil, Casco
- Maine Leathers, Dover-Foxcroft
- Green Street, Houlton
- Wilner Wood Products, S. Paris
- Waterville Gas, Waterville
- Portland Bangor Waste Oil, Wells
- Lewis Wolman Company, Waterville
- Old Bonafide Dump, Winthrop
- Fayscott, Dexter

Feasibility Studies at the following sites were conducted in 1997:

- Willow Street Junkyard, Augusta
- Robbins Property, Ellsworth
- Allen's Garage, Jay
- Wilner Wood Products, S. Paris
- Seaway Boats, Winthrop

A *Human Health Risk Assessment* was conducted by the responsible parties for the New England Pole Site, Yarmouth. The report was reviewed and approved by the DEP. An *Ecological Risk Assessment* for the Wilner Wood Products Site was reviewed by the DEP and finalized.

Remedial Actions

Remedial Actions include remedial design activities as well as the actual implementation of the remedial action. A *remedial design* is a detailed plan for the implementation of the selected remedial alternative. Remedial actions are classified as source control or management of migration (groundwater control) activities. *Removal Actions* are time-critical partial cleanup activities, usually involving the physical removal of source contaminants from a site.

Remedial actions underway in 1997 include:

- GE Bangor (Building 30), Bangor
- GTE-Waldoboro, Waldoboro
- Rumford National Graphics, Belfast
- Brewer Junkyard, Brewer
- Brewer Coal Tar, Brewer
- Farwell Mill, Lisbon
- Tex Tech Industries, North Monmouth
- Allen's Garage, Jay
- Sanford Landfill, Sanford
- Dauphin Landfill, Bath
- East Baldwin School, Baldwin

Removal actions implemented in 1997 include the following sites:

- Eastland Woolen Mills, Corinna
- Merrill Transport Company, Portland
- Sanford Landfill, Sanford
- Wolman Steel, Waterville

Operations and Maintenance/Monitoring

Operation and Maintenance (O&M). O & M activities continued at the Miltonia Management Site in Acton which included inspections of the cap and lagoon dikes and sampling of nearby residential wells. O & M activities at the Saco Tannery Pits Superfund Site included inspection and repairs to the cover systems and fence, semiannual groundwater monitoring, surface water, and sediment sampling. O & M continued at the Hows Corner Site including annual ground water monitoring, and monitoring the operations of the water

system, presently owned by the State and operated by the Plymouth Water District. Semiannual residential and monitoring well sampling continued at Peterson's Farm Store, Colby and Engineering Industries, Norway.

Residential Well Monitoring. Division staff continued to conduct periodic monitoring of groundwater in residential wells and, where necessary, maintained carbon filters in the vicinity of the following sites:

- Miltonia Management, Acton
- Southern Maine Finishing, Waterboro
- Portland Bangor Waste Oil, Wells
- Blackstrap Road, West Cumberland
- Boggy Brook Voc. Center, Ellsworth
- Robbins Property, Ellsworth
- Peterson's Farm Store, Colby
- Harris Road, Cumberland
- E. Baldwin Post Office, Baldwin
- E. Baldwin School, Baldwin
- Limerick Mill Site, Limerick
- Eastland Woolen Mills, Corinna
- Hows Corner, Plymouth

Division staff continued to oversee private parties' monitoring of residential wells in the vicinity of the following sites:

- Tex Tech Industries, N. Monmouth
- GTE Products Company, Waldoboro

Division field staff assisted Technical Services staff with the investigation of numerous public drinking water supplies which had been referred by DHS due to contamination concerns. Sites investigated by Division field staff included:

- E. Baldwin School, Baldwin
- Gray Water District, Gray
- SAD #9 School, Dyer Brook
- Morse School, Brooks
- Marine Trade Center, Eastport

Ground Water Monitoring. Division staff continued to conduct periodic sampling of monitoring wells at the following sites:

- Blackstrap Road, W. Cumberland
- Southern Maine Finishing**,** Waterboro
- Waterboro Patent Corp., Waterboro
- Aroostook State Farm, Presque Isle
- Peterson's Farm Store, Colby
- Engineering Industries, Inc., Norway
- Saco Tannery Pits, Saco
- G & L Machine, Paris
- Menard Property, Biddeford
- Vahlsing, Easton
- Central Chemical, Greene
- Allen's Garage, North Jay
- Seaway Boats, Route 202, Winthrop
- Portland Bangor Waste Oil, Casco
- Portland Bangor Waste Oil, Wells
- Hows Corner, Plymouth
- Milmac Incorporated, Unity

Other Technical and Analytical Data. Division staff completed the review of 36 Phase I Environmental Site Assessment reports prepared by the U.S. Coast Guard in preparation for the transfer of 36 Maine lighthouse properties from the Coast Guard to State, municipal and local nonprofit ownership. Division staff continued to review technical and analytical data submitted by other parties at the following sites:

- Brewer Junkyard, Brewer
- Dauphin Landfill, Bath
- Farwell Mill, Lisbon
- GE Buildings #10, #30, Bangor
- GTE Products Company, Waldoboro
- Merrill Transport, Portland
- N. Berwick Mun. Garage, N. Berwick
- Rumford National Graphics, Belfast
- Tex Tech Industries, North Monmouth
- Marine Trades Center, Eastport
- New England Pole, Yarmouth

- Hows Corner, Plymouth
- Wolman Steel, Waterville
- Old Bonafide Dump, Winthrop
- Maine Drilling & Blasting, Gardiner

Other Related Activities

Negotiations with responsible parties were held for Portland Bangor Waste Oil in Wells, White's Wharf in Biddeford, Dauphin Landfill in Bath, Sanford Municipal Landfill in Sanford, and the Northeast Doran Site in Skowhegan.

Meetings with municipal officials, the public and/or concerned citizens. Meetings were held in Brewer, Corinna, Dexter, Sanford, South Paris, Waterboro and Yarmouth. Staff participated in the Rushton Street Task Force for the Sanford Municipal Landfill Site in Sanford and on the Pole Yard Advisory Committee in Yarmouth.

Agreements. A groundwater filter agreement was made with the East Baldwin School in East Baldwin. A grant agreement was finalized conveying State funds to the City of Brewer for remedial costs associated with capping the former Brewer Junkyard site.

Contract work was performed in regard to Wilner Wood Products, South Paris; Portland Bangor Waste Oil, Wells; Portland Bangor Waster Oil, Casco; Eastland Woolen Mills, Corinna; New England Pole, Yarmouth and Brewer Coal Tar, Brewer.

Cost recovery funds were received from responsible parties for North Berwick Municipal Garage, Rumford National Graphics of Belfast, Wilner Wood Products in South Paris, GE Buildings #10 & #30 in Bangor and Fayscott Company in Dexter. Cost recovery action for the D&S Corporation Site in Bangor was referred to the Attorney General's Office. Cost recovery efforts continue for Central Chemical Company in Greene, Southern Maine Finishing in Waterboro and Dauphin Landfill in Bath.

No further (State) action (NFA) required status was recommended at G & L Machine, South Paris, the Duga Property, Pembroke and Associated Grocers, Gardiner.

A *Potential Responsible Party Search* was conducted for the Walker Boardway Site in Wiscasset.

A Notification of Potential Liability letter was issued for the Leeds Metal Site, Leeds. A supplemental notification letter was issued to approximately 300 PRPs for the Portland Bangor Waste Oil Site in Wells.

New Sites assigned to project managers include the City Dry Cleaners, Presque Isle and the Lewis Wolman Company, Waterville. Reactivated and newly reassigned sites include Fayscott Company, Dexter; the Old Bonafide Dump, Winthrop and Maine Drilling & Blasting, Gardiner.

Requests for Proposals were prepared and distributed for Allen's Garage, Jay.

FEDERAL FACILITIES AND SUPERFUND PROGRAM

Project Managers in the Federal Facilities and Superfund Unit represent the Department and assure compliance with State standards, regulations, and guidelines at sites on the National Priorities (NPL) or "Superfund List", including two active and one former military installation. In addition, the unit coordinates the State's response to all environmental restoration activities at current and former military sites, including Formerly Utilized Defense Sites (FUDS), Army Reserve and Air National Guard Centers, radar installations, etc. Restoration activities range from underground tank removals and site assessments to corrective action, complex groundwater and soil remediation projects, community relations, negotiation of cleanup agreements, and other tasks. Selecting the most cost effective remedy while maintaining Maine's environmental standards is our top priority.

-- Denise Messier, Unit Leader

NON-MILITARY NPL (Superfund) 1997 ACCOMPLISHMENTS

The status of all non military NPL sites in Maine is summarized below:

SITE	National Priorities List	Removal	Remedial Investigation	Feasibility Study	Record of Decision	Remedial Design	Remedial Action	Operation & Maintenance
Hows Corner Site	■	■						
Eastern Surplus Company	■	■						
Saco Municipal Landfill	■	■						
O'Connor Junkyard	■	■	■	■	■	■	■	
Winthrop Landfill	■	■	■	■	■	■		
Union Chemical Company	■	■	■	■	■	■		
McKin Site	■	■	■	■	■	■	■	
Saco Tannery Waste Pits	■	■	■	■	■	■	■	
Pinette's Salvage	■	■	■	■	■	■	■	

Completed ■ Ongoing

Nine nonmilitary Maine sites appear on the NPL. For DEP, one of the highlights of the past year was the completion of the decade long cleanup at the O'Connor Site in Augusta. The former salvage yard was a beehive of activity in the summer of 1997 as 748 truckloads of contaminated soil were excavated and sent for disposal and about 24,000 cubic yards of clean soil was brought to the site to restore the surface. In November the fences came down and footprints, snowmobile tracks and deer tracks were observed in the early winter snow.

The newly constructed cap at Saco Municipal Landfill will reduce migration of landfill constituents to groundwater and surface water near the site. The Saco Tannery Waste Pits site has reached the stage where only monitoring remains and this work is handled by the State Uncontrolled Sites Program.

Winthrop Landfill, Winthrop

In 1997, seep remediation consisting of removal and disposal of arsenic contaminated sediments in Hoyt Brook took place when lake levels were low. DEP continued to receive reports on the performance of the soil vapor extraction (SVE) and groundwater extraction and treatment systems (GWETS). The SVE system was turned off and changes were evaluated. One "hot spot" area (elevated levels of site contaminants) was identified and the SVE system will be modified to focus on this area. Additionally, two (2) extraction wells (EW-4a & EW-4b) were installed in the "hot spot" area. The operation of these new extraction wells in conjunction with the operation of the existing extraction wells is being evaluated.

McKin Site, Gray

In 1997 DEP entered into a mediation process with the EPA, responsible parties, consultants, trustees, the DEP BLWQC, the Maine Attorney General's Office, Friends of the Royal River and local water districts, citizens and others to determine a solution for the Site. As a result, DEP staff participated in and attended numerous meetings. Additionally, the PRP's consultant has assisted the Gray Water District in identifying and locating a municipal source well North of Collyer Brook. Late in 1997, analytical results for the exploration well indicated that the groundwater in this area is contaminated with low levels of Trichloroethylene (TCE), a known site contaminant. The Gray Water District will search elsewhere for a new municipal well.

Union Chemical Co., Hope

In 1997, the treatment system continued to extract contaminated groundwater and vapor from below the ground surface, remove/destroy the contaminants and discharge treated water and air.

In 1997, on-site meteorological data and analytical data from off-site soil sampling were evaluated; it was determined that off-site areas of soil contamination attributable to the operations of the Union Chemical Company facility are not present. As a result, EPA issued an *Explanation of Significant Difference (ESD)* documenting the changes to the off-site soils portion of the selected remedy specified in the 1990 Record of Decision.

Since it began operation, the treatment facility has removed approximately 8,392 pounds of volatile organic compounds (VOCs) from the soil groundwater beneath the Site.

Eastern Surplus, Meddybemps

Remedial investigation and *feasibility study* work continued in the summer of 1997. Sampling of on site soils, surface water and sediment in Meddybemps Lake and Dennys River, monitoring wells, residential wells and ambient air took place. Additionally, the U.S. Fish & Wildlife Service collected fish and mussel samples from Meddybemps Lake and the Dennys River.

During the fall, a *Vapor Extraction System Treatability Study Pilot Test* was conducted in the identified "hot spot" (area of volatile organic contamination) on the Site. Preparation of the "hot spot" area prior to the test consisted of cutting the trees and brush, grubbing the area, and excavating, removing and disposal of the top foot of contaminated soil.

Saco Landfill, Saco

Work continued at Saco on two parallel tracks. In compliance with an *Administrative Order By Consent (AOC)* finalized early in the year, the final cap for areas 3 and 4 was designed and most of the construction was completed. DEP staff visited the site to oversee construction and tracked progress as construction advanced. At the same time, continued investigation and environmental assessment work took place in support of the Remedial Investigation and Feasibility Study which will be finalized in 1998. Special attention was paid to arsenic contamination of sediment near the site.

O'Connor, Augusta

The F. O'Connor Company operated a salvage and transformer recycling business on about 9 acres along US Route 17 in Augusta Maine from the 1950s to the 1970s. Central Maine Power Company and Westinghouse Electric Company sold transformers to the O'Connor Company

before the dangers of polychlorinated biphenyl (PCB) release were known. Transformer oils containing PCBs, a probable human carcinogen, were released to site soils and the surrounding environment.

CMP and Westinghouse shared the cost of the $18 million cleanup effort, but CMP was the lead entity for the cleanup. It developed a remediation plan protective of human health and the environment, obtained the approval of DEP and the Environmental Protection Agency, and implemented the plan.

Contaminants of concern in site *soils* include PCBs, carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and lead. All soils with greater than 10 parts per million (ppm) PCBs, 10 ppm cPAHs and 248 ppm lead were removed from the site. Soils with residual contamination below these levels but above 1 ppm for PCBs and PAHs were consolidated and capped and will remain undisturbed. Groundwater contaminants in the bedrock beneath the site include PCBs and VOCs. Quarterly testing of the groundwater on site will be performed over the next two years to evaluate appropriate cleanup responses. Since the groundwater is not a source of drinking water, no threat to public health is expected. Yearly sediment and biota sampling along Riggs Brook will be done over the next ten years. If concentrations of PCBs in sediments are found to exceed established federal and state standards, additional sampling or cleanup measure will be initiated.

Contaminated soils were sent for disposal to two licensed Special Waste Landfill in the state of Maine (274 truckloads, about 7,949 tons or 12,710 cubic yards) and two out of state hazardous waste facilities (474 truckloads, about 11,351 tons or 18,160 cubic yards).

The total cost breakdown as of mid-November was $6.9 million for remediation expenses, and $11.3 million for engineering studies and all other expenses. Central Maine Power Company is responsible for 59% of the total cost; Westinghouse Electric Company is responsible for the remaining 41% of total cost.

DEP was pleased that in the course of the remediation the area of wetlands onsite was increased by 14% from 2.78 to 3.18 acres.

The remaining work at the site is limited to *Long Term Monitoring***,** which will consist of semiannual inspections, routine annual maintenance (i.e., mowing), and repairs as required.

How's Corner, Plymouth

In 1997 DEP continued to support the Plymouth Water District and track EPA's efforts to initiate a PRP lead Remedial Investigation and Feasibility Study at the How's Corner Site. To prevent use of contaminated groundwater in the short term, some of the responsible parties will take over well monitoring activities under an interim agreement with EPA. DEP will continue to receive monitoring results and advise local officials, well owners and EPA if levels exceed state guidelines.

MILITARY SITES 1997 ACCOMPLISHMENTS

Defense State Memorandum of Agreement (DSMOA)

The Department has an agreement with the Department of Defense through which it

obtains reimbursement for costs associated with active and former military facilities. Through the DSMOA, DEP staff provide oversight, technical assistance and advice, and assurance that installation restoration activities are carried out in accordance with applicable state laws, regulations, policies and guidance. There are two components to the DSMOA program - *NPL sites* and *Formerly Utilized Defense Sites*.

NPL (Superfund) Sites

Two active Navy bases, Brunswick Naval Air Station and Portsmouth Naval Shipyard, and the former Loring Air Force Base, all appear on the NPL. Since military bases greatly resemble small cities, industrial and waste disposal activities on base result in multiple areas of concern. Once potential sites, i.e. disposal areas, landfills and known contaminated areas are located on a base, they are grouped into "Operable Units" to facilitate investigation and clean up.

Brunswick Naval Air Station

DEP participated in quarterly meetings of the *Restoration Advisory Board* with local officials, private citizens, Navy staff and the EPA.

The *Groundwater Extraction and Treatment Plant* continued to operate in 1997. DEP provided oversight of plant operations as well as extraction system efficiency and overall performance. Modifications were made to increase extraction well efficiency. *Long term monitoring* to assess the adequacy of various response actions, including soil removals, continued basewide. Plans were made to examine all long term monitoring data to design the most cost efficient and effective approach to monitoring for the future.

DEP continued to receive and evaluate reports of operation of the *Soil Vapor Extraction/ Aquifer Air Sparging* remedial systems at the Navy Exchange Service Station. These systems were installed to address petroleum contamination from leaking underground tanks at the station.

Loring Air Force Base

DEP continues to work with EPA, the Air Force (through the Air Force Base Closure Agency), the Loring Development Authority, and local representatives through the *Restoration Advisory Board* and the *Base Closure Team.* All parties participate in a team approach to facilitate timely remediation and transfer of the base to private enterprise as soon as possible.

A *Record of Decision (ROD)* was signed for Operable Unit 13, Basewide Surface Water and Sediment. The ROD calls for the cleanup and restoration of a precedent setting 2.25 miles of stream and 35 acres of wetland, which was begun. By the time field activities were secured for the winter, 82,000 cubic yards of contaminated material had been removed and 4000 feet of stream bed had been reconstructed in a manner designed to reclaim its previous function while enhancing fish and wildlife habitat. The DEP team overseeing the restoration includes experts in remediation, natural resources protection, aquatic habitat, hydrogeology and engineering.

Corrective action for petroleum contamination continued in the form of bioventing and bioslurping systems at several areas on base including the 150 acre Nose Dock area, the Auto Hobby Shop, and the Fuel Tank Farm. Continued evaluation of petroleum constituents, and potential risks and hazards took place in anticipation of finalizing the *corrective action plan* prior to final remedial action. DEP continues to oversee efforts to investigate the *Bangor to Limestone Pipeline.*

The status of all the Loring Air Force Base Site is summarized in the following table:

Site Status - November, 1997
Loring Air Force Base Installation Restoration Program

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OU	SITE NAME	I	FS/EECA	PP/CAP	ROD	D	C	CLOSEOUT
1	Low Level Radioactive Waste Sites	X	X	X	X	X	X	X
2	Landfill #2	X	X	X	X	X	X	O
2	Landfill #3	X	X	X	X	O	O	
3	9000 Debris Area	X	X	X	X	X	X	X
3	Chapman Pit Debris Area	X	X	X	X	NA	NA	X
3	Contract Storage Shed (Bldg 7321)	X	X	X	X	X	X	X
3	Demineralization Plant	X	X	X	X	NA	X	X
3	DRMO (Salvage) Yard	X	X	X	X	X	O	
3	Dumpster Cleaning Site (Bldg 7841)	X	X	X	X	NA	NA	X
3	EOD Area - Cylinders	X	X	X	X	NA	NA	X
3	EOD Range	X	NA	O	O	NA	NA	
3	F-106 Crash Site	X	X	X	X	X	O	
3	Golf Course Maintenance Shed	X	X	X	X	NA	X	X
3	KC-135 Crash Site	X	X	X	X	NA	NA	X
3	Ohio Road Debris Area	X	X	X	X	X	X	X
3	Oklahoma Road Debris Piles	X	X	X	X	X	X	X
3	Old PX Gas Station	X	X	O	X	X	O	
3	Prime BEEF Debris Area	X	X	X	X	NA	NA	X
3	Small Arms/Grenade Range	O	NA	O	O	NA	NA	
3	Solvent/Paint Dock Area	X	X	X	X	X	X	X
4	Landfills Area Groundwater	X	X	X	X	X	NA	
5	BX Service Station	X	X	O	O	X	X	
5	Former Jet Engine Test Cell (old)	X	X	O	O	X	X	
5	Nose Dock Area	X	X	X	O	X	X	
5	Support Services Area	X	O	O	O	X	X	
6	East Gate Waste Storage Tanks	X	X	X	X	X	X	X
6	Fuel Drop Site North 1	X	X	X	X	NA	NA	X
6	Fuel Drop Site North 2	X	X	X	X	NA	NA	X
6	Fuel Drop Site South (Active)	X	X	X	X	NA	NA	X
6	Fuel Drop Site South (former)	X	X	X	X	X	X	X
6	Railroad Maintenance Site	X	X	X	X	X	X	X
7	Quarry	X	X	X	X	X	X	X
8	Fire Training Area	X	X	O	O	X	O	
8	Underground Transformer Site	X	X	O	O	X	O	
9	Auto Hobby Shop	X	X	X	X	X	X	
9	Former Vehicle Motor Pool	X	X	X	X	X	X	X
9	Power Plant Drainage Pipe	X	X	X	X	X	X	X
9	Snow Barn	X	X	X	X	X	X	X
10	Jet Engine Buildup	O						
10	Entomology Shop (Bldg 8265)	X	X	O	O	X	X	
10	Pumphouse #1 (Bldg 8270)	X	X	O	O	X	X	
10	Pumphouse #2 (Bldg 8210)	X	X	O	O	X	X	
10	Solvent Storage Building	X	X	O	O	X	X	
11	Base Laundry	X	X	O	O	X	X	
11	Coal Storage Area	X	NA	X	X	NA	NA	X
11	Fly Ash Disposal Site	X	NA	X	X	O	O	O
11	Fuels Tank Farm	X	X	X	X	X	X	
11	Refueling Maintenance Service Area	X	X	O	O	X	X	
11	Vehicle Maintenance Building	X	X	O	O	X	X	
12	Basewide Groundwater	O	O					
13	Flight Line Drainage Ditch	X	X	X	O	O	O	
13	Basewide Surface System	X	X	X	O	O	O	
2A	Coal Ash Pile	X	X	X	X	X	X	X
2A	Landfill #1	X	X	X	X	X	X	X
7A	Receiver Site	X	NA	X	NA	X	X	
NA	Bldg 1008 USTs	X	NA	NA	NA	NA	NA	X
NA	Bldg 8719 Ammonia tank	X	NA	NA	NA	NA	NA	X
NA	East Loring Landfill	X	NA	NA	NA	NA	NA	X
NA	Madawaska Dam	X	NA	NA	NA	X	O	
NA	Obar Road	X	NA	NA	NA	NA	NA	
NA	UST/AST Sites	X	NA	O	NA	O	O	
NA	Pipeline	O		O				

X - Complete **OU - Operable Unit** **ROD - Record of Decision**
O - Underway **D - Design** **I - Investigation**
NA - Not Applicable **C - Cleanup** **PP/CAP - Proposed Plan, Corrective Action Plan**
FF/EECA - Feasibility Study/Engineering Evaluation-Cost Analysis

Portsmouth Naval Shipyard, Kittery

DEP participated in bimonthly *Restoration Advisory Board (RAB)* meetings with local officials, private citizens, EPA and the Navy. While the Shipyard is in Kittery, Maine, it is close to Portsmouth, New

Hampshire and RAB meetings are alternately held in both municipalities and the membership represents both communities.

DEP hired a University of Maine geochemistry specialist to assist in the evaluation of potential contaminant migration from the *Jamaica Island Landfill* to the nearby Piscataqua River Estuary. In the fall DEP provided oversight as mercury waste burial vaults were removed from the landfill. DEP hopes that capping of the landfill as an interim action will take place in the near future.

Formerly Utilized Defense Sites (FUDS)

Historically, the Department of Defense (DOD) owned and/or operated numerous facilities throughout Maine for training, defense, surveillance, communications, and other uses. These sites range from pre-Revolutionary War forts along the coast to Nike missile sites installed for the defense of Loring Air Force Base. DOD has a mandate to identify the sites, address environmental risks, and take the appropriate response actions. DEP is the sole environmental regulatory agency overseeing these actions.

DEP is tracking 175 sites in its FUDS database. Documentation that no further work is necessary, either because all remedial work has been completed or because no evidence of contamination has been found, has been finalized for 26 sites. The following narratives profile highlights of the 1997 FUDS program:

Defense Fuel Supply Point, Harpswell

Defense Fuel Supply Point **(**DFSP) is located on the west side of State Hwy 123 on Harpswell Neck on the shores of Casco Bay, in the Town of Harpswell, Cumberland County. Built by the US Navy for use as a fuel storage and pipeline facility in 1952, it operated as a fuel support point for nearby Brunswick Naval Air Station until 1991.

The Defense Logistics Agency, with oversight and approval of DEP, is preparing the site for transfer of ownership to the Town of Harpswell. Several meetings with Town officials and other citizens were held in preparation for the transfer.

In 1997 underground tanks and soil were removed from the main gate area, a demo debris landfill was properly closed, and additional site investigation and risk assessment work was performed.

Long Island Former Fuel Facility

The Long Island Former Fuel Facility, located in Casco Bay, was operated as the fueling center for the North Atlantic fleet during World War II. The site consists of several 2.85 million gallon underground storage tanks (USTs), four 1.2 million gallon USTs, three 100,000 gallon USTs and various smaller USTs and support buildings such as the Generator House and Boiler House. The entire site was transferred to private ownership in 1968 and its use as an oil facility ceased in 1994. The MEDEP's Oil Terminal Closure Unit is handling the cleaning and closure of the largest tanks and other miscellaneous items while the Federal Facilities Unit is overseeing the proper closure by the US Army Corps of Engineers (ACE) of the support buildings, their associated USTs and pipelines, and dumping areas once used by the Navy.

In the spring of 1997 the DEP responded to reports of oil leaking from an old

abandoned manhole below the Generator Building caused by heavy rains last spring. The DEP collected the leaking oil and excavated and disposed of oil-contaminated soil. An oil-water separator was installed to prevent the uncontrolled release oil that may have remained in the ground. ACE performed a geophysical survey and dug test pits to determine the source of this oil.

The ACE also removed several rusty drums from an old dumping area and sampled the drum contents and soil under the drums. Contaminated soil was excavated and removed from the island. Investigations continued with the excavation of dozens of test pits along 4,000 feet of pipeline once connecting the fueling piers with the Generator House and Boiler House. Very little petroleum contaminated soil was encountered. This contaminated soil was excavated and removed from the Island. The Army Corps also sampled product from various containers located inside both the Generator and Boiler Buildings, and collected concrete chip samples from the Clarifier Building to test for possible presence of PCBs.

During these investigations, a local resident alerted the Army Corps to the possible presence of previously unknown USTs at the former Navy Seaplane Base located on Long Island. Follow up investigations revealed the presence of two 1000 gal USTs, both containing what is believed to be 50 year old aviation fuel. This fuel was pumped out of the tanks and properly disposed of. The tanks will be excavated and removed in 1998.

Additional activities scheduled for 1998 include the removal of the USTs, above ground storage tanks (ASTs) and ancillary piping associated with the Generator and Boiler Buildings, the removal of all product located in containers within those buildings, the cleaning of building interiors, the demolition of the Clarifier Building, and soil and groundwater remediation, if necessary.

Maine Rocket Projectile Target Range-Reid State Park, Georgetown

During the winter and early spring of 1997 the unusually severe erosion of Mile Beach at Reid State Park uncovered relics of World War II. During the war Mile Beach was used as a bombing range to train American and Canadian pilots. Consequently between February and late November 1997, approximately 150 pieces of ordnance consisting of 5" warheads, and 3.25" and 2.25" rocket motors were found by the park personnel. Naval Explosive & Ordnance Disposal (EOD) specialists traveled from Rhode Island to dispose of the warheads on the beach while the rocket motors were stockpiled and disposed of at the Brunswick Naval Air Station.

Mile Beach is a unique ecological niche where a sand dune system and a coastal wetland provide significant wildlife habitat to least terns and piping plover, which are on Maine's endangered species list. Mile Beach is also a heavily used recreational area in one of the State's most popular parks. Ultimately, a work plan was developed that allowed public use of the beach and undisturbed wildlife during the late spring to early fall. In addition, the plan protected all of the natural resources (the significant wildlife habitat, coastal wetland, and coastal sand dune system) and took advantage of the natural erosion to maximize the effectiveness of the removal action.

The frequency of ordnance discovery and the heavy use of the beach by the public prompted ACE to make the determination that there was immediate and imminent danger to the public. therefore ACE recommended the speedier Time Critical Removal Action (TCRA).

Monthly beach profiles provided by the Maine Geological Survey clearly showed the dynamic nature of the beach with continual movement of sand on the beach face. ACE realized little or no ordnance would be removed if it limited the work plan to digging the normal 2 foot depth recommended for upland situations, since there was roughly 2 to 6 feet of additional sand over the spring beach profile. ACE also realized that by taking advantage of natural erosive forces, which began this year in November, less digging would be required. Therefore, ACE was willing to modify its normal scope of work by allowing for a more flexible time frame and a more thorough removal by digging to 6 feet or the underlying peat layer.

Actual removal of ordnance began November 24, 1997. The ordnance and explosives crew used a magnetometer to locate ferrous anomalies in the sand and flagged anomalies for removal later in the day. All ordnance found that day was moved into the upper intertidal to be detonated in case of live explosives or rocket propellant. A jet perforator, using a 38 gram explosive charge, punched holes in each piece rendering it safe.

Upon completion, December 10, 1997, 82 pieces (27 - 5" warheads, 6 - 3.25" and 49 - 2.25" rocket motors) had been removed from approximately four acres of beach ranging between the high water (rack line) and the low water line. All the warheads found were inert.

Photograph of warheads found at Mile Beach at Reid State Park on Dec. 8, 1997. Cut warhead shows thickness of the shell.

Miscellaneous items found during this operation included a 20 foot long iron chain, rocks with high ferrous content, and strips of metal assumed to come from old lobster traps or boats.

The Army Corps proposes to return to Reid State Park and perform an Engineering Evaluation/ Cost Analysis (EE/CA) to determine whether a more extensive removal action will be required. It appears that there may be more ordnance behind the frontal dune, since an archival search by the Corps indicates the back dune area may have been within the bombing range. Also, it is rumored that during the last severe erosion event in the 1970's, many pieces of ordnance may have been taken and dumped behind the frontal dunes.

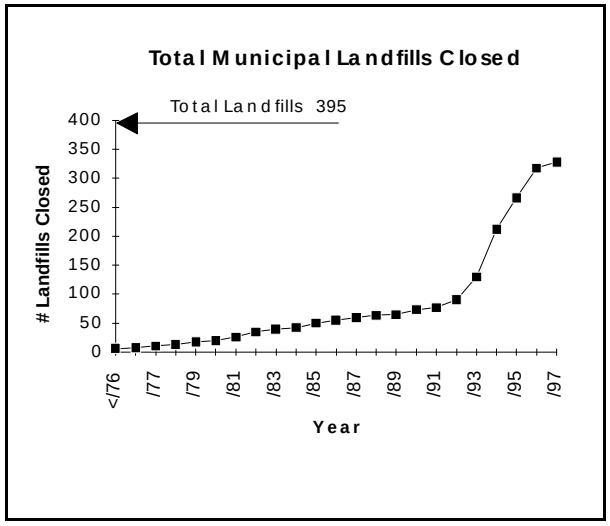
Cooperative weather and an excellent crew made this removal action a success with no harm done to the dune, coastal wetland, or the significant wildlife habitat.

LANDFILL CLOSURE & REMEDIATION PROGRAM

The Landfill Closure and Remediation Program has continued in its efforts to close all unlicensed municipal landfills. The Program did not receive additional bond funding in 1997. A $4.5 million bond originally proposed for November 1997 was delayed for voter consideration until June 1998. Although this money was not available for closure operations in 1997, careful review of reimbursement applications and recovery of unspent grant funds allowed the program to continue progress towards closure of the State's identified municipal landfills.

Of the approximately 395 municipal landfills identified in the State, a total of 327 landfill sites have been officially closed, as of December 31, 1997. Three are partially closed, and 65 remain to be closed. During the 1997 calendar year, a total of 9 landfill sites were closed. Additional sites that closed in previous years were officially certified during 1997. Based on these figures, approximately 83% of the state's municipal landfills have been successfully closed under this program.

The program has identified approximately 13 sites that are expected to complete final closure in 1998. One additional site is expected to close in 1999. Any remaining sites are expected to be either licensed operating sites not scheduled for closure until after 2000 or non compliance sites that did not complete a specified site closure under DEP supervision.



-- Ted Wolfe, Unit Leader

Policy Changes:

As a result of new legislation in 1997, municipalities received a two year extension on eligible closure activities. Municipalities must close their landfill sites by January 1, 2000 in order to receive reimbursement support. However, municipalities that did not submit a closure agreement in 1994 or who do not qualify for a Department Order will receive a reduced state cost share.

With the expected phase-out of the reimbursement process and the declining number of landfills expected to close, the Landfill Closure and Remediation Program is expected to cease landfill closure activities on January 1, 2000. Personnel will be on hand, to close out administration of the program, until January 1, 2001.

Bond Funding Status:

Maine voters have approved 8 of 9 landfill closure bonds totaling $68 million.

The $68 million in bond funds made available to date has been allocated as follows:

- $51.7 million in direct payments to 306 municipalities as grants or reimbursements for closure work;
- ·$12.4 million in payments to towns or State consultants for landfill evaluations and planning work;
- ·$1.9 million remains to be spent but is committed to ongoing town reimbursements, consultant contracts, and encumbered grants;

- $2 million remains to be sold as bond anticipation notes, but is committed to town reimbursements for 1997 closure work.

An additional bond for $4.5 million is on the June 1998 primary ballot for voter consideration. If approved, these funds will be applied towards 1998 closure activities.

Reimbursement/Closure Status:

As of December 31, 1997, of the approximately 395 municipal landfills officially identified in the State, a total of 327 landfill sites have been closed, three are partially closed, and 63 remain to be closed However, several of these sites will remain active beyond 2000. During the 1997 calendar year, 9 landfill sites were closed. Several other sites that actually completed closure work in previous years were also certified during this time period.

The average cost per acre for landfill closures in 1997 was approximately $50,000/ acre. Actual costs varied between $40,000/ acre for minimal clay covers to $120,000+/ acre for composite cap covers.

The closure costs reported by municipalities as of December 31, 1997 total approximately $82.3 million. The State share of municipal closure expenses as of December 31, 1997 total approximately $61.6 million. In most cases the State has paid 75% of eligible expenses. Sixty-one towns received $3.6 million in direct reimbursement payments in 1997 for their landfill closures. An additional 4 municipalities received approximately $1.5 million in grant funding towards 1997 closure activities.

The Landfill Closure and Remediation Program reviewed old municipal grant accounts established by towns for their landfill closure projects. This review has resulted in the return of $330,000 in unspent grant funds. These returned funds will be applied to other municipal landfill closures that occurred in 1997.

Based on available information, approximately 87 municipalities with identified landfills have yet to receive grants or reimbursements from the State and can be funded only through future bond issues in addition to the $68 million already approved. These additional closure costs to the State, including evaluation, design and capping for these landfills are estimated at $20 to $30 million. Total future closure costs are unknown but are estimated to average $60,000/ acre to 75,000/ acre due to a number of moderate to higher risk landfills needing higher levels of closure. The minimum cost to the State of capping <u>all</u> 395 landfills in the State is now estimated at approximately $86.7 million. Future remediation, additional evaluation expenses, and unanticipated reimbursement requests may occur and may add to the total closure costs, but cannot be realistically estimated at this time.

Of the approximately 395 landfills identified by this program, some will not close and thereby not benefit from the cost share program. It is estimated that approximately 11 sites will continue to operate until 2000-2015. An additional 40 municipalities may not close during the specified time period of the program, and subsequently, will be classified as non- complying sites. Consequently, actual additional costs to the State for this program may approach $10 million.

New Post Closure Emphasis Emerging

With the final closing of a majority of Maine's municipal solid waste landfills, more emphasis is now being placed by Closure Program staff on post-closure inspection, maintenance, repairs, monitoring and data tracking.

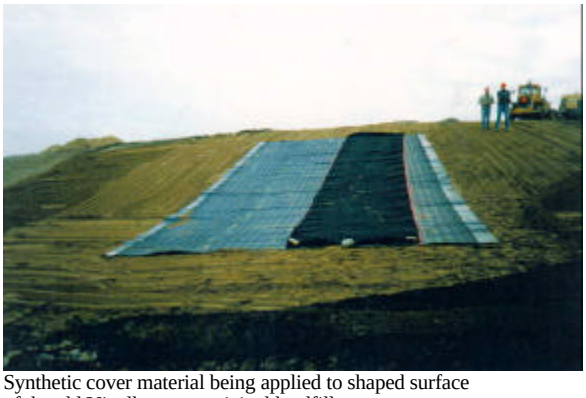
Approximately 20 post closure inspections were completed by Department staff in 1997. These inspections were often accompanied by municipal officials and were followed up by letter summaries stating requirements and/or recommenda- tions by staff.

Post closure remedial investigations were begun by Department staff at the Calais, Kingfield, Standish and Addison landfills. Inspections or other reports revealed slope instability or severe leachate breakout issues at these locations. It is anticipated that these investigations will continue and will result in recommendations for actions later in 1998 or 1999.

Selected Project Highlights

The Town of ***Vinalhaven*** has completed the closure construction work of the their old municipal landfill (dump). The site is located on the island of Vinalhaven approximately 15 miles east of the coast of Rockland. The municipality received a grant award of $656,000. as part of their June, 1997 cost-sharing grant agreement with the State of Maine. These State bond funds were requested for cost-sharing on 75% of the project costs estimated at $875,000. The town of Vinalhaven was prepared with their 25% project cost-share.

The old dump site included an area of approximately four acres of municipal solid waste, on a 15 acre parcel of land which includes Vinalhaven's present transfer station and recycling facility. The closure design work was performed with the town and Woodard & Curran, Inc. design engineers. Of the options available, the town chose to construct a cover system which included gas transmission sand, LLDPE (linear low density polyethylene) geomembrane, geocomposite, and protective crushed stone.



Synthetic cover material being applied to shaped surface of the old Vinalhaven municipal landfill.

Crushed stone was chosen since island resources include neither barrier layer material, nor top soils, and earlier quarrying operations left large piles of waste granite rock that was crushed to usable stone size. Use of other cover system materials required barging cover base soils, gas transmission sand, as well as ferry transporting geomembrane liner, geocomposite liner and personnel/

Final cover material of crushed rock was chosen to make use of local abundance of granite rock on the island.

equipment to the island. The closure construction work was largely the responsibility of BridgeCorp of Augusta. The island location of the project site required an unusual level of coordination in order to maintain a project schedule during a short construction season.

The City of ***Belfast*** has also completed their landfill closure construction project in 1997. This site area was the subject of evaluation work conducted for the Department by Robert G. Gerber, Inc., (RGGI) in 1995, which included hydrogeology of the area with regard to nearby residential water supplies. Following completion of this work, the Belfast City Council also selected RGGI to perform engineering, design and construct- ion administration services relative to conducting their landfill closure construction project.

The municipality received a grant award of cost-sharing funds totaling $428,000. These were provided through two grant agreements of $261,000 in July, 1996, and $167,000 in July, 1997. These timely State cost-sharing grants were based on availability and requested cost-sharing, for 75% of the approximately $570,000 total cost of the project.

The municipal dump is approximately ten acres in size and is situated on a northwest sloping hillside. A significant tire pile adjacent to the dump area was also cleaned up in a project coordinated with landfill closure construction, although the tire project is not eligible for cost-sharing. The cover system included a soil barrier layer constructed with a low hydraulic conductivity (less than 3.4x10-7 cm/s). Venting sand was placed beneath the barrier layer. A manufactured topsoil was placed above the barrier layer soil before mulching and seeding for vegetation growth.

Finished final cover for the Belfast landfill. Note the vent cover in the center of the photo.

H.E. Sargent, Inc. of Stillwater, provided the construction services for the project, with quality assurance testing performed by Morrison Geotechnical Engineering, Inc. of Winslow. The manufactured topsoil was a "BFI-biomix" product derived from sources in Maine. The City completed the project early enough in the construction season to realize a substantial growth of grassy vegetation, which should assist with stabilizing the topsoil and cover system through its first seasons.

The Augusta Sanitary District has received combined reimbursement and Grant funding of $1.3 Million towards final closure of the 15 acre secondary sludge landfill located at Hatch Hill in Augusta. Phase I regrading and consolidation of the landfill wastes, along with some additional interim stabilization measures were completed in 1997. The Phase II final closure, consisting of placement of a composite Flexible Membrane Liner/ Earthen cover, will take place in 1998.

The project continues to be a technical challenge due to the low strength and steep slopes of the wastes, which cause persistent stability issues for the waste mass.

Consolidation of waste material during Phase I of construction of the final cover for the Augusta Sanitary District Landfill.

South Portland received $275,000 as partial State funding to assist with planning, design and initiation of the Phase I closure of their 28 acre landfill during 1997. The level of closure is still being determined for an additional 12 acre outlying waste area. Previous studies by the Department and South Portland determined that, although industrial wastes were likely deposited at the site, risks to public health or the environment were low. Based on these findings, a recommendation was made for placement of a regulation level earthen barrier cover over the regraded wastes. Phase II of the project and closure of the 12 acre outlying area will all take place in 1998.

Westbrook received $425,000 in partial State funding to assist with planning, design and Phase I construction at the 23 acre Sandy Hill Municipal Landfill. The Department limited the closure to placement of a regulation level clay barrier, based on previous findings that the mixed municipal/ industrial wastes were not posing high risks to public health and the environment. Phase II of the project will be completed in 1998.

The Department contracted ABB, Inc. to conduct limited hydrogeological investigations of the ***Mechanic Falls Town Landfill***. Though closed with a "Reduced Procedure" cover, the landfill may pose risks to several nearby water supply wells.

THE SITE ASSESSMENT UNIT

The Site Assessment Unit administers the Voluntary Response Action Plan (VRAP) Program, the state Brownfields Program, and the federal Site Assessment Program for EPA's CERCLA (the federal list of hazardous waste sites) sites. During 1997, the unit functions expanded with the addition of new grant funding through our Core Program Cooperative Agreement from EPA and the renewal of our traditional Multi-Site Cooperative Agreement II (MSCA II). The new Core funding is used to enhance and expand the functioning of the VRAP and Brownfields programs, including the solicitation of potential Brownfields properties from the regional councils and the presentation of a Maine Brownfields Conference in Spring 1998.

Through our new MCSA II grant, we have been completing Brownfields Site Assessments and Site Discovery Projects in an attempt to identify and characterize sites which aren't on the CERCLA list. Division staff submitted ten Site Assessment reports to EPA in 1997: one Site Inspection, eight Site Inspection Prioritization, and one Brownfield Site Assessment. Additionally, through EPA's Archive Pilot, we have requested that EPA remove twelve sites from the active CERCLA list. -- Nick Hodgkins, Unit Leader

In 1997, the VRAP Program added 22 new sites, to bring the program total to 98 sites. Of these 98 sites, 16 were remediated and/or resolved to the Department's satisfaction in 1997, to bring the total number of sites resolved to 73 since the inception of the program in December 1993. Remedial actions are completed at 5 other sites, with

final resolution anticipated during early 1998. Nine sites currently have remedial actions in progress. The other eleven sites are awaiting further investigation and/or the development of remedial plans. The VRAP Program received $10,500 in fees in 1997.

The VRAP Program educated stakeholders at many conferences and meetings in 1997. In 1998, we plan to continue our education and outreach efforts by developing guidance documents on VRAP Program issues and by sponsoring the first Maine Brownfields Conference.

During the year, a VRAP/Brownfields Improvement Committee was formed to provide recommendations to the Department suggesting improvements which could be made to enhance the VRAP Program and further encourage the investigation, cleanup, and redevelopment of Brownfields properties throughout Maine. Final recommendations of the committee are due to be presented in February 1998.

The VRAP Program continued to meet with other state agencies and formed a multi-agency Brownfields Team, pulling together all the pertinent state agencies involved in a Brownfields redevelopment project. The State Planning Office and the Department of Economic and Community Development, the Department of Transportation, the Attorney General's Office, the Finance Authority of Maine, and the Maine Municipal Bond Bank have participated in our Brownfields Team meetings and are working on defining their roles in the "team". The "team" hopes to define the state's Brownfields strategy to assist in redevelopment wherever in the state it may occur.

Some specific site highlights of 1997 include:

Portland Public Market-Portland

The Portland Public Market project is located at the corner of Cumberland and Preble Streets in Portland, Maine. Designed after the Seattle Public Market, it is one of the late philanthropist Elizabeth Noyce's last projects. The market will provide an opportunity for vendors to sell fresh goods year round in a continually reviving commercial and cultural hub of the City of Portland.

Soil contamination at the site resulting from years of commercial activity, including gas service stations and dry cleaners, presented problems in the redevelopment of the property. S.W. Cole Engineering, Inc. of Bangor, Maine, assessed the environmental impacts at the property and devised a plan which safely and effectively dealt with the contamination. With a limited amount of soil removal, the property could be safely redeveloped if a venting system was installed beneath the building floors during construction activities. In working with the architect, S.W. Cole was able to design the venting system into the building design, craftily coordinating form and function.

The August Corporation, as chief executor of the project, sought protections from environmental liability through the VRAP Program. The project, as well as creating temporary construction jobs, will allow a number of small vendors to sell their goods in an open market format and will provide vital services to the surrounding community.

The Former Lily-Tulip Facility-Old Town

In a coordination of state and federal agencies, the former Lily-Tulip facility in Old Town, Maine, was assessed, remediated, and prepared for redevelopment.

EPA Region I, through a "contractor services" Brownfields Grant, identified and assessed PCB contamination at the facility. This allowed the City of Old Town to quantify the hazardous substance contamination at the site so that they could decide to proceed with acquisition of the property.

In addition, the petroleum contamination issues at the property were being assessed by a contractor to the town under the direction of the VRAP Program.

Old Town was able to coordinate the efforts of the two agencies to achieve a full investigation, cleanup, and demolition of the deteriorating mill structure. An "Administrative Order by Consent" was used to lure two other responsible parties to contribute funding for the cleanup/ demolition, and the city is in the process of having a planner develop possible reuse scenarios for the property.

Ayers Island-Orono

With funding from the EPA MSCA II grant, the first "Brownfields Site Assessment" (BSA) was completed by the unit in 1997. A BSA was performed on the abandoned Striar's Textile Mill on Ayers Island in Orono to determine the impacts of the industrial history of the site on the property. The island itself is a 62 acre parcel in Penobscot River which is accessed by a single land bridge. The property lends itself readily to a number of viable reuses, including commercial/industrial facilities or retirement-age housing. For this reason, the unit chose to spend funding on this property.

Assessments of the property indicated that contamination was not as bad as might be expected, given the properties' historically industrial past. Because of the widespread nature of the contamination, however, and the vastness of the property, a large volume of soil containing low levels of contaminant is present on site. Fortunately, the threats posed by the contamination are not that significant, and it could be reasonably expected that the contamination could be dealt with on the property, thereby eliminating the generally prohibitive costs of offsite disposal.

Troy Smith, resident geologist from Division of Technical Services operates Geoprobe at Ayers Island, July, 1997.

At this time, there has been a great deal of interest in the property, but no one has stepped forward to assume ownership.

Fayscott Company, Dexter

A Site Inspection Prioritization (SIP) was finalized on the Fayscott Co. site through the Federal Site Assessment Program this year. This is the third EPA site assessment completed on the site since it was listed on CERCLIS in 1981. The SIP report concentrated on answering questions arising from the previous investigations.

The Fayscott Company is a machine tool manufacturing facility located on Rt. 7 in Dexter. Machine tool manufacturing began on the property in 1884 and has continued under various owners since that time. Hazardous materials used at the facility during that time included: cyanide, heavy metals, and volatile organic compounds.

Allegations arose during previous investigations of improper disposal of these materials on the Fayscott property. A dry well used for disposal of cyanide containing waste was thought to exist onsite but had never been confirmed. During the SIP investigation staff identified extensive contamination across the site as well as contamination in the East Branch of the Sebasticook River exceeding ambient water quality criteria (AWQC).

As a result of the SIP report White Consolidated Industries (WCI), a former operator of the facility, contacted the Department, developed a scope of work and began investigating the property. Under the direction of the Division's Uncontrolled State Sites Unit, WCI completed a ground penetrating radar survey, installed monitoring wells and dug test pits. WCI also located and removed the elusive dry well. The investigation and remediation will continue at this site during 1998.

PETROLEUM HYDROCARBON REMEDIATION PROGRAM

Implementation of the State's Petroleum Hydrocarbon (Oil) Remediation Program is dispersed among four Divisions which operate within the Remediation and Waste Management Bureau. The Remediation Division's Remedial Planning Unit (RPU) consists of three program staff who: 1) manage DEP cleanup activities at the state's highest priority oil contamination cases, 2) provide management oversight and remedial contracting expertise for Bureau-wide procurement efforts, 3) develop, implement, and update the Bureau's FASTRACK Consultant's List, and 4) manage the contracting, implementation and upgrading of the Bureau's computerized tracking system, and data base sharing capabilities.

Program implementation responsibility is shared with the Remediation and Waste Management Bureau's Technical Services Division, Response Services Division, and the Underground Storage Tank Licensing and Enforcement Divisions. RPU staff manage cleanups at above ground storage facilities as well as releases to the state's surface waters. With so many government groups responsible for program administration, positive interaction, clear communication, and coordination of activities are very critical. -- Tom Benn, Unit Leader

Program Management Successes

During 1997 the Remedial Planning Unit (RPU) has expanded our management efforts to include 42 cases where petroleum hydrocarbons have impacted drinking water supplies. This year we have increased our reliance upon DEP Technical Services staff, and members of the FASTRACK Consulting community. We managed cleanup projects located throughout the state, and have dealt with Fuel Oil, Diesel, Gasoline and other petroleum constituents in a myriad of environmental settings.

With assistance of other bureau staff, including twelve Engineers and Geologists, the DEP team has worked on 347 cases. Bureau staff based in the DEP's Regional Offices, located in Bangor, Portland and Presque Isle further expand our presence at petroleum hydrocarbon remedial efforts.

The DEP has operated remedial systems at spill sites located at retail and wholesale oil storage facilities, town municipal offices and garages, elementary schools, state-owned facilities, federal government buildings, marinas, motor carrier fuel spills and releases from home heating oil tanks. The scope of these projects range from instances of self-contamination, and rather simple well replacements, to complex regional approaches at sites where as many as 12 contamination sources have been documented, with greater than 60 contaminated properties identified.

Remedial efforts undertaken at these sites range from soil excavation and soil stabilization, to complex and expensive product recovery, and groundwater filtration systems. We are proud of our usage of innovative technologies; however, we remain committed to low-cost and effective environmental cleanups.

RPU staff are equally instrumental in the management of large-scale construction projects, which include developing replacement drinking water utilities as warranted by environmental and societal realities. Currently RPU staff manage five replacement water utility projects, which can be detailed, politically sensitive and complex. However, they are ultimately quite rewarding. Staff expertise is showcased most markedly in these cases.

Bureau efforts have finalized long-term cleanups at 157 sites during 1997. The Bureau is currently administering 89 remediation contracts, and oversees countless other cleanup projects. We have 51 FASTRACK contracts and contract amendments currently in force. These Remediation contracts, have a net worth of over $756,000. The Remediation Division and members of the Consulting Engineers of Maine have partnered to revamp our DEP contract procedures. Remedial Planning Unit staff have remained instrumental in managing Bureau-wide contracts, as well as assisting DEP staff with contract related questions.

The Oil Program has always been committed to provide threatened or contaminated residential wells with Point-Of-Entry (POE) filtration systems. Approximately 1200 Maine residents participate in the DEP's Quarterly Hydrocarbon Monitoring (QM) Program. The DEP's estimated cost to operate this program is $240,000.

In addition, RPU staff participate and direct various Bureau initiatives. We participate in committees such as the Leaking Underground Storage Tank Process Action Committee (LUSTPAC), Contract Management Group, and several other committees. A large project which is showcased is the Spill Site Tracking System (SSTS). Staff has increased their reliance upon computers, which has increased data sharing and improved case management. Staff is currently upgrading the Bureau's SSTS computer program, which provides all Bureau staff with up to date information on all DEP spill activities. Enforcement, Site Priority Status, Responder Reports, Spill Expenses, Contract Tracking and Funding Decisions are all available to the reader. This system is a product of much effort by DEP staff, and presently is undergoing another improvement effort.

Below listed are four environmental remediation case summaries, which signify the range of typical efforts undertaken by the Remedial Planning Unit.

Village-wide Remediation, Tenants Harbor
Spill Number # A-147-92

This project, the highest priority case on the DEP's Remediation List with the largest incidence of non-catastrophic oil contamination, has been receiving much attention at DEP. This year the DEP team further characterized the extent and nature of groundwater contamination in the village. Additionally, we operated and upgraded the remediation systems currently in place at two spills located at the International Order of Oddfellows (IOOF) Lodge and Allen properties.

In the Fall, DEP staff and our FASTRACK Consultant, Emery & Garrett Groundwater, Inc. (EGGI) sampled 75 homeowners in the area that are eligible to be supplied with alternative public water system. Work is progressing toward selecting, and gaining site access to provide a water supply for the village.

POE Filters have been placed on 62 households. A POE Filter study had been undertaken in 1997 due to premature breakthrough of filter media at some residences. The study showed that enlarged Carbon Filtration vessels (four cubic feet) are the most effective in removing petroleum hydrocarbon contamination in this village, and quite possibly in other coastal settings.

S & M Market, South China
Spill # A-171-85

This site first came to the attention of the Oil Remediation Program in 1985. A remedial 'pump and treat' system has removed more than six (6) million gallons of contaminated groundwater to date. The DEP team continues to monitor the impacted residents, and we have recently completed a "Village" sample round. Underground Storage Tanks (UST's) at the store and other sampling locations at and around the facility have revealed no additional contamination sources.

DEP staff and our FASTRACK Consultant, Dames & Moore, conducted two Public Informational Meetings, and presented Summary Information to the China Planning Board last month. POE Filter maintenance, communication with the RP's and area residents regarding the status of DEP response, and follow-up with affected parties are ongoing. Current plans are for the remediation system to be operated throughout 1998, with system shutdown planned for the end of the year.

Lee Village Remediation, Lee
Spill # B-112-82

In late 1995, DEP staff decided to investigate and implement, if possible, the shut down of the remediation system in Lee, due to high maintenance costs and reduced effectiveness. To implement this, it was determined that residential wells for the MacDonald and Hillman homes would need to be properly abandoned because they were receptors for the contaminated groundwater still present. This plan would also require the locating of replacement wells for the Hillmans and MacDonalds. It was also determined that an intensive monthly monitoring program was needed for the other residential drinking water wells that may be impacted by the shutdown of the remediation system. Finally, it was determined that an investigation of the Haskell's Store was necessary to ascertain the need for additional contaminated soil removal from the former LUST sites.

1997 Accomplishments. In April 1997, a direct-push soil survey was done at the Haskell's Store to document the presence of contaminated soil. The investigation showed the presence of contamination, but that any recovery attempt would be impractical. A monthly monitoring program was implemented for the nearby residences and the remediation system was shutdown in July. In September, the replacement wells for the MacDonald and Hillman residences were located and drilled and subsequently connected. The monthly monitoring of other nearby residences did not indicate any impact from the

remediation system shutdown. The abandoned Hillman and MacDonald wells did show increased contamination.

Village Market Remediation, East Pittston
Spill #A-428-87

The Remediation Planning Unit has overseen this project for many years. Due to the extent and nature of the groundwater contamination, DEP had previously constructed a replacement drinking water utility for the 12 affected residents.

In 1996, groundwater monitoring studies indicated that contamination had spread to the east side of the river, an area previously considered not at risk of contamination. The DEP team decided to expand the distribution system, since this was determined to be the most viable option. DEP, contractors and the East Pittston Water District worked cooperatively to provide connections to four additional households. Construction was completed in calendar year 1997, and a revised subsidy was negotiated, and payment provided to the utility.

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